REMARKS

Prior to this Amendment, claims 1-23 are pending in the application. In the pending Office action, the Examiner rejected claims 1-23 as being unpatentable in view of cited prior art. By this Amendment, Applicants are amending claims 1, 2, 7-9, and 20. Reexamination and reconsideration in view of the amendments and remarks contained herein are respectfully requested.

Claim Objections

The Examiner objected to claim 8 stating that (x) and (n) are not defined. Applicants amended claim 8 to correct the informalities. Withdrawal of the objection is requested.

Applicants amended claims 7-9 and 20 to correct antecedent basis errors.

Claim Rejections Under 35 U.S.C. § 103(a)

The Examiner rejected claims 1, 3-14, and 16-23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,853,553 (Hosie) in view of U.S. Patent No. 4,418,677 (Hofmann). The Examiner rejected claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Hosie in view of Hofmann and further in view of U.S. Patent No. 5,698,905 (Ruthlein et al.). The Examiner rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Hosie in view of Hofmann and further in view of U.S. Patent No. 5,929,611 (Scott et al.).

For establishing a *prima facie* case of obviousness, three basic criteria must be met. *M.P.E.P.* § 2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art, not in Applicants' disclosure. Applicants assert that the Examiner's proposed combinations do not meet the *prima facie* case of obviousness for the amended claims.

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosie in view of Hofmann. Amended claim 1 recites

> A vehicle comprising:
> a plurality of wheels;
> an internal combustion engine having a drive shaft interconnected to drive at least one of the wheels;
> a stator having a core and a plurality of wires disposed on the core in a three-phase winding arrangement;
> a flywheel-rotor apparatus surrounding at least a portion of the stator and interconnected with the drive shaft, the flywheel-rotor apparatus being operable to magnetically interact with the stator to produce a three-phase alternating current in the wires, and to provide an inertia to the internal combustion engine;
> a power circuitry electrically connected to the plurality of wires, the power circuitry being operable to receive the three-phase alternating current and to controllably generate a single-phase alternating current; and
> an electrical outlet electrically connected to the power circuitry, the electrical outlet being configured to receive the single-phase alternating current and make the single-phase alternating current available for use by an operator.

The Hosie reference does not teach or suggest a vehicle including, among other things,

- an internal combustion engine having a drive shaft interconnected to drive at least one of a plurality of wheels;

- a flywheel-rotor apparatus surrounding at least a portion of a stator and interconnected with the drive shaft, the flywheel-rotor apparatus being operable to magnetically interact with the stator to produce a three-phase altering current in the wires, and to provide an inertia to the internal combustion engine; or

- an electrical outlet being configured to receive a single-phase alternating current and make the single-phase alternating current available for use by an operator.

Rather, the Hosie reference discloses a diesel-electric propulsion operating system for a trolley and diesel bus dual mode vehicle (or simply the bus). See abstract, 1-6, and col. 4, lines 13-29.

> A general schematic of the power system for the bus is illustrated in Fig. 5. The system includes a diesel engine 34 controlled by a governor 36. The engine is

connected directly to a three-phase alternator 38 supplying three-phase AC power to a rectifier 40. The DC output of the rectifier is passed to the input control 32 which is a switching unit for selecting either the output from the alternator or the power derived from the controlling lines [i.e., the 600 VDC trolley line] to power the operating systems. . .

The DC power selected by the input is passed to the main drive inverter 42 of the inverter unit 26. The main drive inverter 42 converts the DC power received into an AC power for driving the traction motor 20, and where used, an optional traction motor 44 that may provide a second axle.

Col. 4, lines 30-46.

When the engine provides the power to the bus, the alternator 38 converts mechanical energy from the engine 34 into electrical power and the electrical power is used to drive the traction motor(s) 20 (and 44). Id.; see also, col. 5, lines 44-63 and col. 6, lines 13-50. Therefore, the engine does not have a drive shaft interconnected to drive at least one of the wheels, as asserted by the Examiner. Further, as acknowledged by the Examiner in point 4 of the pending Office action, the Hosie reference does not describe using a flywheel-rotor apparatus. Instead, the Hosie reference only generically shows an alternator 38.

Additionally, the Hosie reference does not describe an electrical outlet being configured to receive a single-phase alternator current and make the single-phase alternating current available for use by an operator. An example of an electrical outlet is disclosed in the pending application as reference number 140. The Hosie reference describes a power distribution network 48 that is capable of supplying 110 VAC, single phase power to a coolant pumped motor 60 and an engine block heater 62. See Figs. 5 and 8; col. 4, lines 59-61; and col. 7, line 49 to col. 8, line 8. There is no discussion within the Hosie reference about providing the 110 VAC power to an electrical outlet for use by the operator. Therefore, the Hosie reference does not teach or suggest the subject matter of claim 1.

The Hofmann reference does not cure the deficiencies of the Hosie reference. The Hofmann reference does not teach or suggest, among other things,

- a stator having a core and a plurality of wires disposed on the core in a three-phase arrangement;

- a power circuitry electrically connected to the plurality of wires, the power circuitry being operable to receive the three-phase alternating current and to controllably generate a single-phase alternating current; or

- an electrical outlet electrically connected to the power circuitry, the electrical outlet being configured to receive the single-phase alternating current and make the single-phase alternating current available for use by an operator.

Rather, the Hofmann reference discloses a stator mounted on an engine 10 including circumferentially spaced power coils 19 lying in a plane of and radially inward of a plurality of power magnets 20 mounted on an engine flywheel 12.

> As most clearly seen in Fig. 2, the power coils 19 are connected in two groups of five coils, with the coils in each group connected in electrical series. In the preferred embodiment each group of power coils is connected to a bridge circuit 29 made up of four diodes to provide full wave rectification. A switch 30 provided between the groups of coils allows them to be connected to the electrical load, represented by the battery 31 in Fig. 2, in either series or parallel relationship. With the switch 30 open as shown in Fig. 2, the groups of coils are connected in parallel with each bridge circuit 29 supplying direct current to the battery 31. With the switch 30 closed, the coils are effectively connected in series and the diodes 32, 33, 34 and 35 serve as a bridge circuit to rectify the current generated. A pair of shunt type voltage regulators 36, such as that described in the U.S. patent application of Staerzl, Ser. No. 06-059,054, filed on July 19, 1979 and assigned to the same assignee as this application, are connected across the [bridge] rectifier circuits 29 to provide regulated power to charge the battery 31.

Col. 3, lines 23-43.

Therefore, the Hofmann reference does not teach or suggest the subject matter of claim 1. Consequently, claim 1 is allowable since the cited references, either individually or combined, do not teach or suggest all of the claim limitations of claim 1 (i.e., the third prong of the *prima facie* case of obviousness is not met).

In addition, neither the Hosie reference nor the Hofmann reference provides a suggestion or motivation to combine with the other reference (or another reference) to teach the claimed invention. The bus/trolley having the propulsion system described in Hosie does not have a flywheel-rotor apparatus to provide inertia to the internal combustion engine. Specifically and as described within the Applicants' application, the flywheel/rotor apparatus uses its inertia to

smooth-out the rotation of the drive shaft. This allows the engine to run evenly for providing mechanical power to cause rotation of the interconnected wheels. See the application, page 11, lines 12-23. The engine of the bus/trolley provides significant horsepower and has a significant rotating mass without the flywheel such that a flywheel-rotor apparatus for providing inertia to the internal combustion engine is not required. Therefore, it would not be obvious to modify the bus of the Hosie reference to include a flywheel-rotor apparatus.

Further, while the Hofmann reference describes an engine for an outboard motor, snowmobile, lawn tractor, and similar devices, there is no suggestion within the Hofmann reference that the reference can be used with the bus/trolley of Hosie. That is, Hosie requires the alternator to provide sufficient electrical power to drive the traction motors. Hofmann describes providing electrical power to charge a battery. The alternator of the Hofmann reference cannot be used to power traction motors for driving a bus/trolley.

Moreover, neither reference suggests or provides any motivation to modify their disclosures to include an electrical outlet configured to make a single-phase alternating current available for use by an operator. Accordingly, claim 1 is allowable.

Claims 3-23 depend, either directly or indirectly, from claim 1, and consequently, include patentable subject matter for the reasons set forth above with respect to claim 1. Additionally, claims 3-23 specify additional elements and/or limitations that, in combination with claim 1, are believed to be inventive. Therefore, dependent claims 3-23 are allowable.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosie in view of Hofmann as applied to claim 1 and further in view of Ruthlein et al. Applicants amended claim 2 into independent form such that claim 2 includes all the limitations of claim 1. The discussion above for Hosie and Hofmann in connection with the limitations of claim 1 apply equally to claim 2. Additionally, neither the Hosie nor Hofmann references include all the elements of the power circuitry. See point 5 of the pending Office action. Instead, the Examiner argues that the combination of the Hosie, Hofmann, and Ruthlein et al. references render claim 2 unpatentable.

The Ruthlein et al. reference does not teach or suggest, among other things,

- an internal combustion engine having a drive shaft interconnected to drive at least one of a plurality of wheels;

- a flywheel-rotor apparatus surrounding at least a portion of a stator and interconnected with the drive shaft, the flywheel-rotor apparatus being operable to magnetically interact with the stator to produce a three-phase alternating-current in the wires, and to provide an inertia to the internal combustion engine; or

- an electrical outlet being configured to receive the single-phase alternating current and make the single-phase alternating current available for use by an operator.

Rather, the Ruthlein et al. reference discloses a hybrid propulsion system for road motor vehicles such as an automobile or a bus. See col. 10, lines 36-57. The system includes a generator 7 coupled to an engine 5, which drives the generator 7. Col. 5, lines 67-75. Coupled to the generator is an electronic generator control system 13. The electronic generator control system 13 controls the electronic commutation and conversion of the currents generated by the generator 7 into direct current power for a direct current intermediate circuit 9. Col. 6, lines 53-57. A motor control system 11 is coupled to the direct current intermediate circuit 9. See Figs. 1 and 1A. The motor control system 11 converts direct current power from the direct current intermediate circuit 9 into alternating current for an electric motor 1. Col. 6, lines 19-30. The electric motor 1 drives one or more wheels 3. Col. 2, lines 62-67.

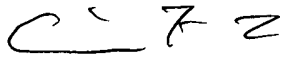
The engine 5 does not have a drive shaft interconnected to drive at least one of the wheels 3. Instead, the engine 5 includes a shaft for driving the generator 7, while each wheel 3 is driven by one or motors 1. See, e.g., col. 5, lines 63-67. Further, the Ruthlein et al. reference does not describe using a flywheel-rotor apparatus. Instead, the Ruthlein et al. reference only generically shows a generator 7. Additionally, the second alternating current signal created by the motor control system 11 is provided to the motor. There is no electrical outlet making a single-phase alternating current available for use by an operator. Therefore, the Ruthlein et al. reference does not teach or suggest the subject matter of claim 2.

Accordingly, claim 2 is allowable since the cited references, either individually or combined do not teach or suggest all of the claim limitations of claim 2.

CONCLUSION

Entry of the Amendment and allowance of claims 1-23 are respectfully requested. The undersigned is available for telephone consultation at any time during normal business hours.

Respectfully submitted,



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